PLANTÆ BAKERIANÆ

By EDW. L. GREENE,

AND OTHERS.

VOLUME I.

FASCICLE 1.

FUNGI TO IRIDACEÆ.

Price, Forty Cents.

PLANTÆ BAKERIANÆ.

Under the above title, for the purpose of citation easily abbreviated to Pl. Baker., it is proposed to issue a series of lists of plants collected by Mr. Carl F. Baker and his colleagues and distributed to various herbaria on both sides of the Atlantic.

The first volume of these Catalogues will include the collections of 1898 by Messrs. C. F. Baker, F. S. Earle and S. M. Tracy in Southern Colorado. The sets were distributed nearly two years since, and, as regards the flowering plants, under names in a very great many cases far from correct. Nearly all were subsequently submitted to me for determination; and this list, in so far as I have edited it, will be approximately correct as to the identity and nomenclature of the species.

Edw. L. Greene.

Catholic University of America,
Washington, D. C., 23 Jan., 1901.

Narrative.

By F. S. Earle.

In planning a botanical collecting trip to Southwestern Colorado our objects were first, to secure sets of plants representative of the flora of this interesting region; and, second, to study in the field the effect of altitude and exposure on the variability and the distribution of species. It was at first hoped that we might be able to examine somewhat critically the La Plata Mountains in the extreme Southwestern part of the State, and also considerable portions of the larger neighboring range of the San Juan. Lack of time prevented carrying out the latter plan, the work being confined exclusively to the La Plata Range, and the neighboring lower levels. The region proved admirably adapted to the purposes of the expedition. The Range is isolated, and though small in area is of considerable altitude, the central peak, Mt. Hesperus, holding its rugged snow-streaked crest at the height of 13,300 feet. As seen from the west this mountain presents a peculiar and fantastic appearance. The portion above timber line is a regularly outlined rock pyramid formed of nearly horizontal strata of various colors giving a curious banded effect; while numerous gulches filled with snow mark it with vertical lines of white. Mt. Hesperus is flanked and supported on the North by Shark's Tooth, a pinnacle of rock well deserving its name; on the South by the jagged double peak of Mt. Moss, or Mt. Hayden as it is locally called, and on the East by Snowstorm Peak, which justified its cognomen during our stay in its neighborhood by covering itself with a fresh coat of white in the middle of July. None of these

outlying peaks rival the central mass of Mt. Hesperus, but all reach nearly or quite 13,000 feet, and their sheltered gulches hold abundant snow far into the summer to feed the mountain brooks, and furnish moisture for the luxuriant alpine vegetation that springs up like magic as the snow line retreats. From the basins between these peaks arise many streams. The La Plata River rises to the eastward of Hesperus and flows nearly due South; East, Middle, and West Mancos creeks flow from its western flanks, all uniting above the town of the same name to form the Mancos River, which flows in a southwesterly direction. Bear Creek rising North of Hesperus, between that peak and Shark's Tooth, flows to the northwestward, while the drainage from the eastern side of Shark's Tooth and Snowstorm Peak and is tributary to the Las Animas.

Two of our party reached the little town of Mancos on the Rio Grande Southern railway on Tuesday, June 21, 1898, and went into camp near the river to await the coming of the third member who had been detained at his home in Mississippi by a suddenly-imposed yellow fever quarantine.

The valley at Mancos is from one to two miles wide. Formerly a sage plain, it is now, thanks to irrigation, mostly covered with green wheat and alfalfa fields. Owing to its elevation, 7,000 feet, corn and the more tender vegetables can not be grown on the Mancos. To the North and East the valley is bounded by the foot hills and lower ridges of the La Plata Range, the snow-streaked top of Hesperus being plainly visible. The hills bounding the valley to the South are strikingly different from these in conformation, being flat-topped with precipitous sides, evidently belonging to the great mesa formation of the Southwest. The steep northern slopes of these mesas facing the valley

are covered by a dense growth of chaparral, giving them in the distance a deep blue or almost black effect. This chaparral consists largely of scrub oak *Quercus undulata* interspersed or sometimes almost replaced by clumps of Amelanchier, Peraphyllum, Rhus, Fendlera, and Cercocarpus. The summits of the lower foot hills on either side of the valley support a scattered growth of nut pine and red cedar, *Pinus edulis* and *Juniperus monosperma*. Looking westward the eye wanders over great stretches of undulating sage plains and piñon-covered ridges to the Blue Mountains of Utah a hundred miles away. Southwestward the view is limited by the less elevated Ute Mountain Range, lying distant some thirty miles.

The five days of a necessary detention at Mancos were devoted to the flora of the valley; and these proved quite as instructive as any equal portion of time spent at higher altitudes. Three well-defined floral belts were reached from this riverside camp. First, the flood plain of the Mancos, a narrow bottom, varying from a few yards to a quarter of a mile in width. Some parts of it are grassy and meadow-like; others occupied by swampy thicket. The largest trees are those of the narrow-leaved poplar, *Populus angustifolia*; and this was the only member of its genus seen here, except the aspen. The buffalo berry, *Lepargyrea argentea*, conspicuous by its silver-gray foliage, is abundant, forming large clumps, and reaching the height of fifteen and even twenty feet. The thickets are composed of various willows, interspersed with some choke-cherry trees, *Cerasus demissa*, and dogwoods, *Cornus stolonifera*; these supplemented by dense masses of *Distegia involucrata* reminding one of the hedges of so-called "buckbrush," *Cephalanthus*, bordering the banks of swampy lakes in Mississippi River bottoms.

At this elevation the *Distegia* (the *Lonicera involucrata* of

some authors) attains the height of eight or ten feet; but up near the timber-line it is a dwarf of sometimes not more than one or two feet. The more conspicuous herbaceous plants of these thickets are *Mertensia ciliata*, *Geranium Richardsonii*, a new species of buttercup, *Ranunculus Earlei* (Greene), and *Polemonium filicinum*, a species originally from southern New Mexico, and which here it may be assumed, reaches its northern limit of distribution. Among such as these were also gathered a few herbaceous plants, notably *Carex aurea* and *Collomia lanceolata*, and several more, which are more properly subalpine and alpine. And as we afterwards grew familiar with the whole region, including the higher elevations about the headwaters of this stream less than twenty miles away, the wonder constantly grew, not that only a few alpine or subalpine plants should occur in the valley below, but that so few of these species had been able to adapt themselves to the condition of the lower levels even where the cool thickets furnished such excellent shade with abundant moisture, and the rapidly flowing stream offered such abundant facilities for the downward distribution of seeds. As a rule the Mancos specimens of species having a considerable altitudinal distribution were taller and more slender than those subsequently taken in mountain meadows; which variation seems attributable partly, at least, to their having grown in the shade. But in other cases, such as the *Collomia* and *Carex aurea*, the low elevation seemed to have had the opposite effect of dwarfing the plants; specimens from about Mancos being much smaller than those taken at elevations greater by a thousand feet.

Separated from the flood-plain by a steep bank five to fifteen or even twenty feet high, and constituting a more elevated secondary bottom, the sage plain stretches away for a mile or more on either side of the valley to the foot-

hills. This tract, as I have said, has in part been reclaimed and brought under cultivation. Originally it was covered with low-growing gray-green chenopodiaceous and composite shrubs, such as constitute what is commonly called sage brush. Those portions not under cultivation exhibit these growths, intermixed with clumps of bushy *Amelanchier* and *Peraphyllum* representing the family of the Pomaceæ; and it also supports a peculiar and most interesting herbaceous flora, made up of *Lupinus argenteus* and other lupines, numerous species of *Astragalus* and other papilionaceæ, several Pentstemons and Castilleias, *Allium acuminatum* and *Calochortus Gunnisonii* representing the lily family.

The piñon belt occupies the low foothills from 100 to 400 or 500 feet above the valley. Here *Pinus edulis* and *Juniperus monosperma* combine in not unequal proportions to form a low scraggy woodland growth. Neither species often exceeds twenty feet in height, and each is frequently adorned by its own species of parasitic *Razoumoffskia* and *Phoradendron*. Herbage is scanty in this belt, and the herbaceous species quite characteristic, like *Lescuriella Palmeri*, *Pentstemon linarioides*, *Astragalus scopulorum* and *Picradenia Richardsonii*.

Our belated Mississippian, Professor Tracy, arrived in the morning of June 26 and we started at once for the western flank of Mt. Hesperus, our wagon piled high with boxes of paper, presses, bundles of driers and camp equipage. Our plan was to make a somewhat permanent camp as near timber line as we could go with a wagon, and then to take time to thoroughly explore the country both above and below. Our road started due north from Mancos but soon bore northeast and followed up a rather narrow ridge or divide between the deep rocky cañon of the West Mancos on the right, and Chicken Creek, a smaller tributary of the

Mancos, on the left. About four miles from town, and at an elevation of some 7,500 feet, we left the piñons and the chaparral-covered hillsides through which we had been traveling, and came suddenly into magnificent open pine woods. Our driver told us that the lumbermen distinguished two kinds of pine, but all seemed to be *Pinus scopulorum* the difference in the timber being probably due to differences in the age and condition of the trees. Many of the pines are of large size and the ground between them, while mostly clear of brûshwood, yields a sufficient growth of grass and herbage to give it an attractive park-like effect. Though the collecting in this lower part of the pine belt was not specially interesting, it furnished a few characteristic plants, such as *Lotus Wrightii* and *Lithospermum multiflorum.*

Advancing toward higher ground, the winding road brought us to an elevation of about 9,000 feet, where the pines give place to aspen thickets. At this point we obtained our first impression of the riches of vegetation belonging to the higher mountains; for the aspen thickets of limited extent were found to alternate with considerable stretches of native meadow brilliant with a great diversity of flowers blooming among the abundant grasses. Fields of the large sunflower-like *Wyethia Arizonica*, clumps of purple lupine bordering these, red Castilleias and white *Polygonum bistortoides*, Potentillas of several sorts along with other things as showy combined to form a beautiful and most inviting botanical landscape.

Still continuing the gradual ascent, spruces (*Picea Engelmannii*) began to intersperse themselves in groups among the aspen clumps, becoming gradually more and more preponderant, until finally the aspens cease altogether at 11,000 eet, where the spruces thenceforward hold undisputed sway

up to the timber-line which, in this latitude, is at about 11,500 feet.

Having made a late start, on this first day of the ascent, we covered only about fifteen miles, camping for the night near the head of Chicken Creek. A little beyond this point our road descended abruptly into the West Mancos Cañon, thence following that stream up to Jackson's stamp mill, at the very base of Mt. Hesperus. The difficulty of getting our heavy outfit back out of this deep cañon seemed so great that we decided to keep on up the ridge, following some old cattle and pack trails as far as it should prove practicable to take the wagon. We succeeded in getting three or four miles further, and made our second camp on the headwaters of a little tributary of the West Mancos locally known as Bob Creek. We had reached an elevation of 10,500 feet and were about two and a half miles due west of the main peak of Mt. Hesperus, but with the deep and rugged valley of Slide Rock Creek lying between. The laborious climb out of this valley with a heavy load of plants, after a day's collecting on Hesperus convinced us that we had made a mistake in not taking the lower road and so pitching our camp in the cañon, when the homeward trip would always have been down hill.

The region above timber was reached in three different places from this Bob Creek camp, on the southwest face of the ridge between West Mancos and Slide Rock Creeks, which constitutes the westernmost spur of Mt. Hesperus, on the north face of the same ridge farther east near the head of Slide Rock Creek, and on the Bear Creek divide northeast of camp. In all these places the ground was rather dry and exposed. Many interesting plants were taken, but the full glory of the alpine vegetation was not seen till we

reached the moister basins at the head of the La Plata River on the eastern side of the range.

One of the most interesting features of this western flank of the range was the great reaches of verdant mountain meadow stretching away in every direction between the scattered clumps of spruces and aspens. The grass, consisting largely of Poas and Festucas, was exceedingly luxuriant and was everywhere sprinkled or crowded by showy species of Mertensia, Polemonium, Valerianella, Frasera, Veratrum, Aconitum, Delphinium and numberless other smaller flowering plants.

The morning of July 6 found us breaking camp and starting on the return trip to Mancos. The season was now at its height, and it was marvelous to see how rapidly vegetation was developing at these high altitudes. Had time permitted we should gladly have lingered longer at this camp, for each day brought new species into bloom, and it seemed to our regretful eyes that we were leaving more still undeveloped species behind us than we had found in condition to collect. The trip back to Mancos occupied two days, as much time was consumed in collecting on the way the things that had opened during our brief absence. A further stop of two days in Mancos enabled us to pack and ship the dried plants that had accumulated, and to take a short side trip over the sage plains to the southwestward along the road toward Cortez, in the direction of the Ute Mountain. This day's collecting proved to be the richest in the number of specimens taken and in the number of new species of flowering plants discovered of any on the entire trip, thus showing that in planning future work in this region the lower levels should receive careful attention.

The afternoon of July 9 found us again under way for a trip up the La Plata Valley on the east side of Mt.

Hesperus. Our route lay over some low divides through a rather uninteresting country, part of the time in oak chaparral, and at times getting up into the open pine belt. During the afternoon of July 10 we passed Dix P. O. and reached the old mining camp of Parrott City at the foot of the mountains, just at the entrance to the cañon of the La Plata River. Continuing a few miles further, we made camp in the bottom of the cañon about two miles south of La Plata City. This was one of the richest spots visited. The bottom of the valley is only a few hundred yards wide, and it is walled in on either side by the precipitous slopes of the mountains. It is very moist, and is filled with a luxuriant tangle of vegetation. *Rubus Nutkanus* here grows to perfection, and the ground is fairly carpeted with the showy *Erigeron coulteri* and *Penstemon glaucus stenosepalus*. The gravel banks in the stream also furnished conspicuous and abundant species, including *Epilobium latifolium* and *Senecio atratus*. The elevation here was about 9,000 feet.

On July 12 we again moved camp going toward the head of the valley. Above the town of La Plata the cañon grows much narrower and the grade is much steeper. The road is soon forced to leave the stream and is cut into the hillside. For a considerable distance no suitable place for a camp could be found, but finally just below the mouth of Basin Creek, at about 10,000 feet elevation, a projecting ledge of rock gave us just room to put up the tent and get the wagon out of the road. Stakes being out of the question tent ropes were made fast to boulders, and our quarters, though restricted, proved sufficiently comfortable. Wagon roads have been constructed several miles farther to reach various stamp mills, but they were so rough and steep that we did not attempt to take our heavy outfit beyond this

point but made daily trips above timber line in various directions.

The basins of the small streams far above timber line were here all veritable alpine gardens well stocked with Mertensias, Polemoniums, Trifoliums, Erigerons, Castilleias and many other showy alpine genera. Even the most rugged slopes exhibited a great diversity of species; for every nook and crevice among the rocks where any soil had found a lodgment was filled with plants. On the very summit of Mt. Hayden at 13,000 feet we gathered excellent specimens of *Trifolium nanum*, *Chionophila Jamesii*, *Ligusticum Eastwoodiæ* and *Pentstemon Harbourii*.

It is to be noted that about three-fourths of the plants collected here were of species not represented at any of the lower altitudes.

It was with much regret that on July 16 we took leave of this interesting locality and made our way to Durango. Each little sheltered slope and basin that we visited furnished some plant not seen elsewhere, and, had time permitted a thorough exploration of the region our list of species would have received many additions. Furthermore, the flowering season had not yet reached its fullness. Very many species were not yet beginning to bloom, and it was manifest that a month's sojourn would have enabled us to nearly double our collections.

This Alpine research was disappointing in respect to only two groups of plants. Of ferns we took but two species, *Cystopteris fragilis* and *Cryptogramme acrostichoides*; and the number of lichens was much smaller than had been anticipated. The bare rocks supported a fair number of crustaceous species, which, owing to the early loss of our chisel, we were unable to collect; and terrestrial and arboreal species were very scarce.

Durango is a thriving town located in the valley of the Las Animas river at an elevation of 6,500 feet. South of the town the hills rise 1,000 or 1,500 feet higher. They are mostly composed of beds of shale with a few coal-bearing strata and so give but few plants of interest during the hot midsummer months, even along the narrow ravines and arroyas. The Grindelias, Mentzelias and Eriogonums found within the city limits proved fully as interesting as the plants of these nearby hills. In some places they support a considerable growth of *Juniperus monosperma* with scattered trees of piñon. Near the eastern edge of the town one small hill was noticed that had been covered by a rather dense growth of this juniper, but now only a few of the trees were living, the others having apparently been killed by *Gymnosporangium speciosum* Peck, which had left the swollen and distorted trunks marked with its peculiar plicate tumors.

North of town toward Trimble Springs the Animas valley is somewhat broader, though bounded on each side by precipitous mountain walls which rise from 2,000 to 2,500 feet above the stream. Every acre of irrigable land is in a high state of cultivation, hay or green fields and orchards filling all the valley from Durango to where the Hermosa River joins the Animas. Here we noted similar willows to those found at Mancos and at the base of the cliffs were box elders and *Ribes cereum.*

Through the kindness of Col. Thomas Hamor, of Durango, we were enabled to make a somewhat hasty trip to Columbine, twenty-five miles north of Durango, on the old Silverton trail, and only a few miles to the eastward of our Upper La Plata camp. The place is near the head of the valley, and Hamor's Lake, a picturesquely beautiful sheet of water, is one of the sources of the Las Animas river. The lake

seems to have been formed by the sudden closing in of the cañon wall so that though not large it is of great depth. It is as clear as crystal and even after our visit it still contains some magnificent trout. The elevation here is about 9,000 feet and the hills and wet meadows near the lake yielded a greater number of species than any other equal area that we visited. In the water of the lake itself was an abundance of Chara Hippuris and Potamogeton while on its borders were *Thalictrum alpinum*, *Gentiana heterosepala*, *Swertia scopulina*, *Agastache urticæfolia*, *Lilium montanum* and many other species not taken elsewhere.

Mr. Tracy, who was the last to arrive, remained in the neighborhood of Durango until July 28. Messrs. Earle and Baker departed on the 18th and 19th respectively, making about an even month in the field for each of the three members of the expedition.

Perhaps the most striking impression gained by the trip, aside from that produced by the abundance and beauty of the high alpine flora, is that of the distinctness with which the different altitudinal floral zones are marked out and limited. It is true a few species were found all the way from the Mancos River bottoms at 7,000 feet to timber line at 11,500 feet, but these instances are rare. In the great majority of cases each species observed had an altitudinal range of not to exceed 1,000 feet, even with similar conditions of soil and moisture. In a general way these life zones seemed to be the same here as in the not far distant San Francisco Mountains of Arizona, where they have been so carefully studied by Dr. Merriam, of the U. S. Biological Survey. We could easily distinguish the piñon-cedar belt, the pine belt, the aspen-spruce belt and the timber line belt as designated by him, and we found this division a very useful one in the prosecution of our work.

While we endeavored to make our work as thorough as possible for the very limited region actually explored, we realize fully that it is only a beginning. The number of plants collected serves to illustrate the great floral richness of the region, and our experience suggests that for future work the higher mountains should be visited during the period from July 15 to September 1, when an almost entirely new set of plants would be in bloom; and that work in the lower levels, especially in the cañon and mesa region south and west of Mancos is greatly needed earlier in the season, say from May 1 to June 15. It is hoped that at least some of our party may be able to continue the work another season.

CATALOGUE.

FUNGI.

By S. M. TRACY and F. S. EARLE.

Among the more striking features of the fungus flora of the region which the collection represents may be mentioned the great abundance of the *Uredinales* and *Sphæriales*. The *Erysibaceæ* would have been abundant later in the season, though only two species were found in condition to collect. *Perisporaceæ* were entirely lacking, as were also the *Hysteriales*, though the latter were persistently sought for everywhere. The *Pezizales* are represented by only two species. The *Helvellales* do not appear in the list, but fine specimens of *Morchella* and *Gyromitra* were observed in the high spruce woods. The *Agaricaceæ* are very scantily represented in the list, but they were really quite abundant in moist locations at the higher altitudes. Lack of time and of facilities for properly drying the specimens prevented collecting them. Among the *Sphæriales* which constitute nearly a *third of all* the species collected, and of which considerably over one-half proved to be undescribed, the almost entire absence of such common eastern genera as *Hypoxylon* and *Valsa* is to be noted, as well as the great abundance of *Lophiostomataceæ*, a family rarely found by eastern collectors. The Dothideales and Hypocreales are each represented by a single species only.

It is interesting to note that of the entire collection only the following five species were taken above timber line: *Schizonella melogramma*, *Puccinia acrophila*, *P. Claytoniatum*, *P. Pimpinellæ* and *Patinella Crandallii*. The smallness of this list is to be accounted for in great part by the fact that our

time above timber line was always limited and that the beauty and abundance of the flowering plants claimed our attention, to the neglect of the Fungi.

In the following list the sequence of families is that of Engler & Prantl. In the few cases in which the generic name used by us is another than that employed by Saccardo in the *Sylloge Fungorum*, the latter is added in parenthesis.

Peronosporaceæ.

Albugo candidus (Pers.), Kuntze, Rev. Gen. ii: 658. Little Kate mine, La Plata Mts., 11,000 feet, July 13, on *Sophia*, n. 1084.

Bremia Lactucæ, Regel, Bot. Zeit. St. 39. Tab. 3. Mancos, 7,000 feet, June 24, on *Agoseris*, n. 1,089.

Peronospora arenariæ macrospora, Farlow, Bot. Gaz. ix: 38. Bob Creek, west of Mt. Hesperus, 11,000 feet, July 5, on *Silene*, n. 340. This corresponds very closely to specimens collected in Illinois, and so determined by Farlow, l. c. The differences he so clearly pointed out between this and the European *P. Arenariæ* indicate it to be a distinct species, but as our specimens are mostly without oospores we decline to make the change, and write the name as above.

Peronospora parasitica (Pers.), Fr., Sum. Veg. 493. Chicken Creek, west of Mt. Hesperus, 9,000 feet, July 6, on *Arabis*, n. 1,085; also on *Sophia*, at Mancos, 7,000 feet, June 24, on *Sophia*, distorting the stems; n. 1087. This common parasite was observed on various cruciferous hosts throughout the region.

Ustilaginaceæ.

Schizonella melogramma (DC.), Schrœt, Pilz. Schles.

275. Bob Creek, west of Mt. Hesperus, 10,500 feet, July 5, on *Carex atrata*, n. 1,032; Little Kate mine, La Plata Mts., 11,500 feet, July 14, on *Carex*, n. 1,035.

Tilletia asperifolia, Ell. & Ev., Jour. Myc. iii., 1,055, Durango, 6,500 feet, July 26, n. 1,034, on *Sporobolus asperifolius*.

Ustilago bromivora, Fisch. Apercu, 22. On hills above Parrott City, July 10, on *Bromus ciliatus*, n. 1,033.

Ustilago Hilariæ, Ellis & Tracy, Journ. Myc. viii, 77. At Mancos, 7,000 feet, July 8, on *Hilaria Jamesii*, n. 1,080.

Ustilago segetum (Bull.) Dit. in Sturm, DC. Fl. Fr. iii, 67. On Chicken Creek, 7,000 to 8,000 feet, July 7, on *Danthonia*, n. 385.

Uredinaceæ.

Æcidium abundans, Peck, Bot. Gaz. iii. 38. Upper La Plata River, at 10,000 feet, July 13, on *Symphoricarpus*, n. 1070.

Æcidium album, Clint. Rep. N. Y. Mus. xxvi. 76. On Bob Creek, 10,500 feet, on *Vicia*, n. 1048.

Æcidium Clematitis, DC. Fl. Fr. ii. 243. Foothills above Dix, 8,000 feet, July 10, on *Clematis Douglasii*, n. 1051.

Æcidium Compositarum Lactucæ, Burrill, Bull. Ill. State Lab. ii. 232. Chicken Creek, 9,000 feet, July 10, on *Lactuca*, n. 351; also Mt. Hesperus, 10,000 feet, June 30, on *Agoseris*, n. 342.

Æcidium Epilobii, DC. Fl. Fr. ii. 238. Bob Creek, at 10,000 feet, June 28, on *Epilobium*, n. 178.

Æcidium Fendleri, n. sp. Mostly hypophyllous; spots large, often 1 cm broad, deep red, bordered with yellow,

substratum not thickened, pseudoperidia scattered thickly over the entire lower face of the spot but not crowded, bright yellow, height about equalling diameter (400μ), margin irregularly lacerate, recurved, cells loosely joined, irregularly polygonal, walls thick, 4–5μ, conspicuously roughened, 20–30μ; spores subglobose, bright yellow, minutely roughened, about 20μ; spermagonia honey-yellow, inconspicuous, barely 200μ. Mancos, 7,000 feet, July 7, on leaves of *Berberis Fendleri*, n. 381. This differs from *Æ. Berberidis* in the larger, not thickened spots, the less crowded perithecia, the larger and more ornate peridial cells, and in its slightly roughened spores.

Æcidium hemisphæricum Peck, Bot. Gaz. iii. 34. Durango, 6,500 feet, July 26, on *Lactuca*, n. 1072. These specimens also show what seems to be *Puccinia Prenanthis* (Pers.), Fckl. II & III. They are from leaves of the same plant as No. 1071.

Æcidium Hydrophylli Peck, Rep. N. Y. Mus. xxvi. 78. La Plata River, 9,000 feet, July 11, on *Hydrophyllum*, n. 1067.

Æcidium incurvum n. sp. Amphigenous; spots none; irregularly clustered, deeply buried, scarcely emergent, opening of pseudoperidium very narrow, limb short, irregularly lacerate, incurved, cells thin, striate, 40–50x20–25μ; spores globose or broadly oval, dark colored, epispore thick, slightly echinulate, 40–50x20–25μ; spermagonia not seen. Chicken Creek, 9,000 feet, July 7, on *Erigeron flagellaris*, n. 1055.

Æcidium intermixtum Peck, Bot. Gaz. iv. 231. At Limon, June 24, on *Iva axillaris*, n. 1037.

Æcidium monoicum, Peck, Bot. Gaz. iv. 320. At 10,000 feet, on Mt. Hesperus, July 6, the host some species of *Arabis*, n. 1086.

ÆCIDIUM OROBI, Pers., in Rœmer Mag. i. 82. At Mancos, on *Lathyrus*, 7 July, n. 1049.

ÆCIDIUM PHACELIÆ, Peck, Bull. Torr. Club, xi. 50. Chicken Creek, at 9,500 feet, common on a *Phacelia*, n. 1068.

ÆCIDIUM PRENANTHIS, Pers. Syn. 208. La Plata River, at 9,500 feet, on *Helenium Hoopesii*, 16 July, n. 1075.

ÆCIDIUM SOMMERFELTII, Johans. Swampe Icl. 161. La Plata River, 9,000 feet, July 11, the host a *Thalictrum*, n. 1065.

ÆCIDIUM URTICÆ, Schum. Fl. Saell. ii. 223. At Mancos, on *Urtica gracilis*, 22 June, n. 41.

CÆOMA CONFLUENS (Pers.), Schrœt. Pilz. Schles. 376. La Plata River, 9,000 feet, 11 July, on *Ribes*, n. 1076.

CHRYSOMYXA PIROLÆ, Rostr. Mycol. Notiz. 126. Slide Rock Cañon, west of Mt. Hesperus, 11,000 feet, 2 July, on *Pirola*, n. 1040.

GYMONSPORANGIUM sp. No. 1079, on twigs of *Juniperus monosperma*, at Mancos, July 8, seems to be an undescribed species of this genus, but our specimens are all old and sterile. They form globular swellings an inch or more in diameter. Spots of an undeveloped *Rœstelia* were found near this, on leaves of *Amelanchier*.

GYMNOSPORANGIUM, sp. No. 1078, on twigs and branches of *Juniperus nana*, Bob Creek, 11,000 feet, July 5. This causes fusiform swellings of the limbs much like those formed by *G. clavipes*, but the spore-masses are different in shape and of a lighter color, and the spores lack the swollen pedicel characteristic of that species. It is probably new, but our specimens are not in a condition to insure correct diagnosis.

Gymnosporangium speciosum Peck? Bot. Gaz. iv. 217. On branches and trunks of *Juniperus monosperma*, Durango, 6,500 feet, July 20, n. 1079. This forms large fusiform, plicate swellings on the trunks or larger branches, frequently causing the death of the tree. The specimens were too old for positive identification.

Melampsora Lini (DC.), Tul. Ann. Sci. Nat. (1854) 93. On *Linum Lewisii*, Chicken Creek, 9,000 feet, July 7, n. 1039.

Phragmidium mucronatum (Pers.), Lk. Spec. Plant. ii. 84. At Hamor's Lake, north of Durango, 9,000 feet, July 24, on *Rosa*, n. 1062.

Phragmidium Rubi-ideæ (DC.), Winter? II. Die Pilze. 231. No. 1043, on *Rubus Nutkanus*, La Plata Cañon, 9,000 feet, July 11. Similar to the form of this species credited to this host, but the *Uredo* spores are larger, 20–28x15–20μ, and prominently reticulated, not echinulate. We found no teleutospores.

Puccinia aberrans Peck Bot. Gaz. iv. 217. No. 1050, on *Draba*, Bob Creek, 10,500 feet, July 1.

Puccinia acrophila Peck l. c. vi. 227. No. 1069, on *Synthyris Ritteriana*, Cumberland Mine, La Plata Mts., 12,000 feet, July 15.

Puccinia Balsamorrhizæ Peck, Bull. Torr. Club. xi. 49. No. 1036, on *Balsamorrhiza deltoidea*, Mancos, 7,000 feet, June 23.

Puccinia Calochorti Peck, Bot. Gaz. vi. 228. No. 1056, on *Calochortus Gunnisoni*, Mancos, 7,000 feet, July 9.

Puccinia Claytonianum (Schw.) N. Am. Fungi, No.

2892, p. 294. (*P. Mariæ-Wilsoni* Clinton). Cumberland Mine, La Plata Mts., 12,000 feet, July 15, on *Claytonia megarrhiza*, n. 1045.

Puccinia conglomerata (Str.), Schm. & Kze. Crypt. Exsic. No. 191. No. 1057, on *Senecio*, upper La Plata River, 10,000 feet, July 12. Not before reported from America, but the specimens agree closely with Sydow Uredineen, No. 461, and with published descriptions.

Puccinia fragilis Tracy & Galloway, Journ. Myc. iv. 20. No. 423 A, teleutospores, 423 B, æcidial stage, on *Arenaria* (?) sage plains west of Mancos, July 8. The generic identity of the host could not be determined with certainty. This seems to be the first collection of the æcidial stage of this fungus, and we give it the following description: Amphigenous but more abundant below; spots none; pseudoperidia scattered or clustered, cylindrical, length about equal breadth, border narrow, spreading, coarsely lacerate; spores subglobose, light colored, epispore thin, slightly roughened, 16–16x19μ.

Puccinia Gayophyti Billings, Bot. King Exp. 414. No. 1046, on *Gayophytum*, Parrott City, July 16. We find no published description of the Uredo stage of this species. Our specimens show the following characters: Amphigenous; sori small, round, scattered, yellowish; spores globose to oval, often somewhat angular, slightly echinulate, 14–16x12–14μ.

Puccinia Hieracii (Schum.) Mart. Fl. Mosq. 226. No. 72, on *Crepis*, Mancos, 7,000 feet, June 23. No. 57, on *Taraxacum officinale*, Mancos, June 23.

Puccinia Holwayii Diet, in Hedw. xxxii. 29. I and III

No. 1077, on *Allium*, Bob Creek, 10,500 feet, June 28. The æcidial stage of this species has not been described. We find the following characters: Amphigenous; spots yellow; pseudoperidia in irregular elongated clusters, nearly white, short cylindrical, border somewhat lacerate, cells irregularly polygonal, 25–30x15–20μ, walls thick, 3–4μ, roughened; spores light yellow, subglobose or oval, epispore thin, nearly or quite smooth, 20–22x16–18μ; spermagonia not seen.

Puccinia mirablissima Peck, Bot. Gaz. vi. 226. No. 1060, on *Berberis nana*, Greene, Mancos, June 23.

Puccinia Pimpinellæ (Strouss), Lk. Sp. Plant. ii. 77. No. 1064, on *Glycosma occidentalis*, Little Kate Mine, La Plata Mts., 11,500 feet, July 14.

Puccinia Prenanthis (Pers.) Fckl. Symb. 25. At Durango, on *Lactuca*, n. 1071.

Puccinia Tanaceti, DC. Fl. Fr. ii. 222. Little Kate Mine, La Plata Mts., 11,000 feet, on some Helianthaceous composite, 16 July, n. 1054.

Puccinia Tanaceti Actinellæ, Webber, Nebr. Rep. for 1889, p. 66. At Mancos, 23 June, on *Actinella leptoclada*, n. 74.

Puccinia Thalictri, Chev. Fl. Par. i. 417. At Mancos, 24 June, on *Thalictrum Fendleri*, n. 1066.

Puccinia Troximontis, Peck, Bot. Gaz. vi. 227. West Mancos Cañon, at 9,000 feet, 3 July, on *Agoseris*, n. 1074.

Uromyces Astragali (Opig.), Sacc. M. S. 208. At Mancos, 8 July, on *Astragalus*, n. 437.

Uromyces Eriogoni, Ell. & Harkn. Cal. Acad. 1884, p. g. (I only). Foothills, near Dix, 9,000 feet, 10 July, on *Eriogonum*, n. 1044.

Uromyces Euphorbiæ, C. & P. Rep. N. Y. Mus. xxx. 90. At Durango, on *Euphorbia*, n. 1042.

Uromyces Glycyrrhizæ (Rabh.) Magn. Ber. Deutsch. Gesell. 1890, p. 383. Durango, July 18, on *Glycyrrhiza, lepidota*, n. 1063.

Tremellaceæ.

Guepinia alpina n. sp. Cup-shaped, short-stipitate; disc orange yellow, about 6 mm (when dry), margin slightly involute; stipe 3mm, like the outside of the cup pruinose from thick standing, vessiculately swollen hairs, that are about 50x16μ, simple, or sometimes once septate and constricted, minutely roughened; hymenium of closely compacted cylindrical basidia filled with yellow granules, seemingly simple, but forking at base, about 40x3$\frac{1}{2}\mu$; spores oblong, continuous, about 12x4μ (immature). On decayed wood of *Picea Engelmanni*, in a snow bank, Slide Rock Cañon, 11,000 feet, July 2, n. 1109.

Guepinia monticola n. sp. Cup-shaped, ferrugineus, short-stipitate, thin, expanded when wet, involute when dry, 3–8 mm, exterior sulcate-ribbed, surface scarcely distinguishable to the naked eye from the hymenium, clothed with vessicular hairs 50μ long, with base globose, 20–25μ wide, abruptly contracted above into a long beak; hymenium of closely packed, cylindrical, yellowish basidia 40–50x3$\frac{1}{2}\mu$, forking near the upper end; spores cylindrical, slightly curved, continuous (?), guttulate, 12–16x4μ, on slender sterigmata about 10μ long. On sound, decorticated wood of *Picea Engelmanni*, Slide Rock Cañon, 10,500 feet, June 30, n. 241. Quite common.

Boletaceæ.

Boletus Bakeri n. sp. Pileus 10–20cm, regularly con-

vex, uniformly bright brick-red verging toward salmon, viscid, becoming somewhat dry and occasionally cracking areolately with age, flesh pure white, slowly changing to pinkish purple when cut; pores at first pure white stuffed and plain, becoming ventricose and tawny, turning purplish and then greenish blue when bruised, deeply sinuate; stem stout, enlarged below, tapering abruptly upward for the upper one-fourth, 3–4cm thick below, 1½–2cm above, 8–12cm high, solid, pure white within, externally white, but beset with upward pointing, brown tipped scales, usually smooth above. On the ground, common in moist aspen thickets. No. 355, Chicken Creek, 9,000 feet, July 6. Also seen on the upper La Plata at 10,000 feet. Some three dozen specimens of this magnificent *Boletus* were taken, but owing to constant showers, and lack of drying facilities, all but one were lost. Two other species of the genus were seen, but it was not possible to preserve them.

Polyporaceæ.

By L. M. Underwood.

Lenzites sepiaria, Fries, Epicr. 407. On logs of *Picea Engelmannii*, Bob Creek at 10,000 feet, 27 June, n. 797.

Merulius sp. On logs of *Picea Engelmannii* in Slide Rock Cañon, 30 June, n. 10,52. Probably new, but too old for satisfactory determination.

Polyporus adustus (Willd.), Fr. Syst. i. 363. Logs of *Populus tremuloides*, Bob Creek, 10,000 feet, 28 June, n. 778.

Polyporus pinicola, Fr. Eleuch. 105. Logs of *Picea Engelmannii*, La Plata Mts., July, n. 794 and 796.

Polyporus salicinus (Pers.), Fr. Syst. i. 376. On stand-

ing dead trunks of aspen, upper La Plata River at 10,000 feet, 13 July, n. 795.

Polyporus, sp. On logs of *Populus tremuloides*, La Plata Mts., June and July, n. 186 and 799. Perhaps new, but approximating some thick forms of *P. pergamenus*.

Polyporus Pini (Brot.), Fr. l. c. 336. On logs of *Picea Engelmannii*, La Plata Mts., July, n. 800.

Agaricaceæ.

Naucoria Coloradoensis n. sp. Pileus 3–6cm, convex, becoming expanded, slightly umbonate, tawny yellowish-brown, often darker on umbo, densely clothed with felted yellowish hairs, margin not striate, strongly incurved when young; veil arachnoid, soon evanescent; gills adnate, subcrowded, tawny-white, changing to dark-brown; spores oval, dark rusty-brown, usually with a large oval vacuole, about 10x6μ; stem 4–6cm high by 4–8mm thick, slightly bulbose below, colored and clothed like the pileus, but hairs closely appressed and less felted.

On moist shaded ground near the river at Mancos, June 21, n. 22.

Exoacaceæ.

Taphria cœrulescens (Mont.) Tul. Ann. Sci. Nat. 1866. p. 127. No. 32, on *Quercus undulata*, Mancos, 7,000 feet, June 22. Common in oak thickets on hillsides near the river.

Helotiaceæ.

Lachnum Engelmanni n. sp. (Trichopeziza). Scattered or gregarious, subsessile or short stipitate, 1–4mm in diameter, flat and expanded when wet, incurved when dry, exterior thickly clothed with dark fuscous, septate, rigid hairs, 200 or more by 5μ, becoming attenuate toward the

subhyaline tip; disc waxy, bright yellowish orange; asci 8-spored, clavate, obtuse, nearly sessile, about 50x6μ, exceeded by the numerous ascicular yellowish minutely guttulate sharp-pointed apophyses, these measuring about 60x2μ; ascospores monoetichous or partly distichous, hyaline, continuous, oval, about 6x4μ.

Very common on dead bark of *Picea Englemannii* at 10,500 feet in Bob Creek, 3 July, n. 1058.

Patellariaceæ.

Patinella Crandallii, Sacc. Syll. xi. 434. At Little Kate Mine, La Plata Mts., on dead stems of *Sieversia turbinata*, at 12,000 feet, 14 July, n. 1100. An elegant little species, often occurring, on the dead and dry calyxes of the preceding year, of the rosaceous host named.

Erysibaceæ.

Erysibe cichoracearum DC. Fl. Fr. ii. 274. No. 1081, on *Mertensia*, Mancos, June 23.

Erysibe graminis DC. l. c. vi. 106. No. 384, on *Poa nemoralis*, pine belt north of Mancos, 8,500 feet, July 7.

Hypocreales.

Charonectria Pedicularis n. sp. Scattered or subgregarious, perithecia prominent but long covered by the thin epidermis, orbicular, at length subdepressed, bright coral-red, smooth, soft, perforated by an obscure ostiolum, about 400μ; asci numerous, cylindrical, short-pedicellate, aparaphysate, (?) about 100x8μ; ascospores obliquely monostichous, hyaline, minutely guttulate, equally uniseptate, narrowly oval, ends acutish, about 17x4μ.

On dead stems of *Pedicularis crenulata*, Bear Creek Divide,

11,000 feet, June 29, n. 230. This is a new genus to North America. Only three species have heretofore been described, one from Terra del Fuego and two from France.

Dothideaceæ.

Ropographus hysteriiformis (Karst) Sacc. Syll. ii. 648. On decorticated branches of *Picea Engelmannii*, Bob Creek, 10,500 feet, June 28, n. 202. This peculiar fungus has heretofore been found only in Northern Europe on decorticated wood of juniper and pine. Our specimens agree closely with published descriptions. We have not seen European specimens.

Sordariaceæ.

Hypocopra fimicola (Rob.) Sacc. l. c. i: 240. On cow dung, Bob Creek, 10,500 feet, July 2, n. 1105.

Sphæriaceæ.

Herpotrichia nigra Hartig Hedw. xxvii. 13. On living leaves of *Picea Engelmannii*, Bear Creek Divide, 11,000 feet, June 29, n. 232.

This has not before been reported from America. The asci soon vanish, and at full maturity the ascospores are fuliginous. In our specimens the perithecia often reach 5mm. In other respects it closely agrees with the description given by Hartig. It was also observed on Mt. Hesperus near timber line, but was not seen below 11,000 feet. This was previously collected by C. F. Baker on spruce in northern Colorado, July 13, 1896, at Cameron Pass, 10,000 feet, and distributed by him under the name of *Lasiosphæria Coulteri*, Peck. It closely resembles that pine-inhabiting species externally, but the spores are entirely different.

Rosellinia parasitica Ell. & Ev. Proc. Phil. Acad.

1890, p. 227. On dead branches of *Symphoricarpus*, Bob Creek, 10,500 feet, June 27, n. 1073. On the same twigs were also *Gibberidia Symphoricarpi*, *Tricosphæria Barbula* and *Strickeria Symphoracarpi* (B. & Br.) Winter, Pilze, ii. 206. On dead bark of *Picea Engelmannii*, Bear Creek Divide, 11,000 feet, June 29, n. 1082. It has previously been reported only on pine bark from Europe. Our specimens agree so closely with published descriptions, especially with that in Winter ii, that we so name them, but we have not seen European specimens.

Zignoella Potentillæ n. sp. Perithecia scattered, erumpent becoming superficial, black, depressed globose, roughened, ½mm in diameter; ostiolum conical; asci cylindrical or fusiform, short stipitate, 8 spored, 45–50x10–12μ; paraphyses filaform, longer than the asci; ascospores hyaline, oval or elliptical, faintly ¾-septate, 11–12x4–5μ.

On decorticated stems of *Potentilla fruticosa*, Bob Creek, 10,500 feet, July 3, n. 1039.

Cucurbitariaceæ.

Gibberidia Ribis n. sp. Perithecia loosely clustered on large blackened areas, erumpent-superficial, globose, black, ½mm in diameter, ostiolum short conical, roughened; asci numerous, short-stipitate, oblong or elliptical, 90–100x 12–14μ; ascospores fuliginous, elliptical, 5–7-septate, somewhat constricted at each septum, 28–32x6–7μ.

On decorticated wood of *Ribes*, at same station as the last. June 28, n. 1101.

Gibberidia (?) Symphoricarpi n. sp. Perithecia clustered, two or three to twelve or more forming more or less elongated pustules, these partially covered by the shredded epidermis, clothed with long, deflexed, strigose, occasionally

septate, fuscous hairs about 6μ in diameter, carbonaceous, not collapsing, ostiolum minutely papillate, inconspicuous, stromatic material black, scanty, perithecia nearly free, about ¾mm; asci cylindric-clavate, short stipitate, 80–100x14–16μ; paraphyses abundant, thread like; ascospores obliquely monostichous, oval, fuliginous, 3-septate, slightly constricted at each septum, often somewhat curved, 30–35x8–10μ.

On dead twigs of *Symphoricarpus*, Bob Creek, 10,500 feet, June 27, n. 173, with *Rosellinia parasitica* and *Strickeria Symphoricarpi*. The true generic position of this species is somewhat doubtful. Its scanty imperfect stroma suggests that it should be placed in the Cucurbitariaceæ rather than in *Mellogramma*, but the vestiture of the perithecia would exclude it from Gibberidia, as that genus is now defined. Since perithecial hairs are present in the nearly related Gibbera, from which our species is excluded by the spore characters, we prefer to widen the definition of *Gibberidia* rather than to propose a new genus based only on the presence of perithecial hairs.

Otthia Distegiæ n. sp. Densely cespitose in oval clusters of 4 or 5 to 20 or more, on a scanty subiculum of fuscous threads, breaking through the epidermis, black, rugose, collapsing, ostiolum minutely papillate inconspicuous, about ¼mm in diameter; asci 8-spored, clavate, substipitate, about 100x18μ; paraphyses thread-like abundant; ascospores obliquely monostichous or partly distichous, oval or ovate, often curved, light fuliginous, about equally uniseptate, somewhat constricted, about 25x8μ.

On dead twigs of *Distegia involucrata*, Mancos, June 25, in river bottoms, n. 1090.

Otthia (Otthiella) Ribis n. sp. Perithecia densely cespitose, erumpent, partially surrounded by the trans-

versely ruptured epidermis, black, rugose, globose, ¼ to ½mm in diameter; asci cylindrical, 8 spored, stipitate, 80–100 x12–15μ; ascospores distichous, elliptical, hyaline or slightly yellowish, uniseptate, constricted, 18–20x5–6μ.

On *Ribes*, Bob Creek, 10,500 feet, June 28, n. 1102.

Amphisphæriaceæ.

Amphisphæria Juniperi n. sp. Perithecia scattered, superficial, globose, carbonaceous, not collapsing, ostiolum short-papillate, about 6mm; asci clavate-cylindric, short stipitate, 100–120x20μ; paraphyses abundant thread-like; ascospores distichous, broadly fusiform, light fuliginous, uniseptate, constricted, usually with two large guttae in each cell, ends sub-acute, 30–35x10–12μ.

On the outer shredded bark of *Juniperus monosperma*, hills near Mancos, July 8, n. 780.

Amphisphæria Populi n. sp. Perithecia thickly scattered, small, globose, black, shining, not collapsing, obscurely perforate, base sunk in the whitened wood fibres, about 250–300μ; asci cylindrical, short stipitate, 80–90x8μ; paraphyses abundant thread-like; ascospores monostichous, oval or ovate, ends rounded, fuliginous, equally uniseptate, much constricted, about 12x6 .

Decorticated branches of *Populus angustifolia* at Mancos, June 21, n. 1103.

Strickeria insecura (Ell.) Tracy & Earle, (*Teichospora insecura*, E. & E. N. A. Pyr. 214). Dead twigs of Salix, Bob Creek, 10,500 feet, July 4, n. 1059.

Strickeria Symphoricarpi n sp. (*Teichospora* Fckl.) Perithecia scattered or somewhat clustered on irregular blackened areas, large, ½ to 1mm, black, carbonaceus, globose, rugose, not collapsing, ostiolum minutely papillate, in-

conspicuous; asci cylindrical, short stipitate, 150–200x16μ; paraphyses abundant, delicate, thread-like; ascospores monostichous, broadly oval, at first yellow 1-septate and much constricted, becoming dark fuscous and 3-, 5- and finally 7-septate, the middle, but not the comparatively large end cells, longitudinally divided, constricted only at the middle septum, about 25x12μ.

Dead bark or decorticated twigs of *Symphoricarpus*, Bob Creek, 10,500 feet, June 27, with nos. 173 and 1073, n. 1076. The size and septation of the spore is much as is in *Teichospora strigosa* E. & E. on the same host.

Tramatosphæria Juniperi n. sp. Perithecia scattered, subfree, suborbicular, black, carbonaceous, not collapsing, $\frac{1}{2}$mm or more in diameter, ostiolum tuberculate, prominent, black, shining; asci clavate, short-stipitate, soon evanescent, about 100x10μ; paraphyses abundant, threadlike, guttulate; ascospores obliquely monostichous or subdistichous, fuliginous, obtuse-fusiform or subcylindric, often curved, 5–7-septate, somewhat constricted especially at the middle septum, 30–35x6–8μ.

On weather-worn wood of *Juniperus monosperma*, foot hills near Mancos, July 8, n. 1093.

Lophiostomataceæ.

Lophiostoma occidentalis n. sp. Perithecia scattered, prominent, black, roughened below smooth above, oval, 1–1$\frac{1}{2}$x$\frac{3}{4}$–1mm, ostiolum compressed; asci clavate-cylindric, stipe long and slender, 150–160x20μ; paraphyses long filiform; ascospores elliptical, rounded above, more slender below, fuscous, becoming opaque, 5-septate, 30–40x10–15μ, when immature with a large vacuole in each cell.

On barkless branches of *Juniperus monosperma*, Mancos, June 24, n. 1111.

PLATYSTOMUM ACERIS n. sp. (*Lophidium* Sacc.) Perithecia scattered, black, rough, compressed, $\frac{3}{4}$–1x$\frac{1}{2}$–$\frac{3}{4}$mm, ostiolum depressed, elliptical; asci oblong, stipitate, 100–120x14–16μ; paraphyses numerous filiform; ascospores obliquely monostichous, oval, 3-septate, deeply constricted at the middle septum, muriform, dark brown, 17–18x9–10μ.

Dry decorticated twigs of *Acer glabrum*, upper La Plata River, 10,000 feet, July 13, n. 1107.

PLATYSTOMUM ALPINUM n. sp. (*Lophidium* Sacc.). Perithecia widely scattered over considerable areas, becoming subsuperficial, black, rough, hemispherical or slightly oval, $\frac{3}{4}$x1mm, ostiolum obscurely papillate, inconspicuous, slightly elongated; asci cylindrical, short-stipitate, 140–160x12–14μ; paraphyses numerous, filiform; ascospores obliquely monostichous, broadly elliptical or ovate, brown becoming opake, 5-septate, sharply constricted at the middle, central cells with long longitudinal septa, 20–22x8–10μ.

Dead barkless wood of *Populus tremuloides*, Bob Creek, 10,500 feet, June 27, n. 170. The asci and spores are much as in *Lophidium trifidum* E. & E., but the gross characters are very different.

PLATYSTOMUM AMELANCHIERIS n. sp. Perithecia scattered, deep seated, black, rough below shining above, nearly hemispherical, $\frac{1}{2}$–1mm, ostiolum inconspicuous, often irregularly elongated; asci cylindrical, stipitate, 140–150x13–15μ; ascospores obliquely monostichous, fuscous, becoming opaque elliptical with usually acute ends, 3–5-septate, muriform, slightly or not constricted, 22–24x7–8μ.

On decorticated branches of *Amelanchier* at Mancos, June 23, n. 1110.

PLATYSTOMUM DESERTORUM n. sp. Perithecia scattered, subsuperficial, black, rough, usually hemispherical but some-

times oval, ½mm in diameter, ostiolum elliptical or nearly circular; asci cylindrical, long stipitate, 135–150x11–13μ; paraphyses very numerous, filiform, much longer than the asci; ascospores obliquely monostichous, oval, dark-brown, 5–7-septate, much constricted at the middle septum, muriform, 22–24x8–9μ.

No. 1108, on dead stems of "Sage Brush" (*Artemisia*, sp. ?), Mancos, June 24.

MYCOSPHÆRELLACEÆ.

MYCOSPHÆRELLA COERULEA (E. & E.) Tracy & Earle. (*Sphærella coerulea*, E. & E. Proc. Phil. Acad. 1894, n. 334.) Dead stems of *Aquilegia coerulea*, Bob Creek, at 10,500 feet, n. 1116. The dimensions are somewhat larger than those given in the description, and the spores are decidedly yellowish. We find the perithecia 120–140μ, asci ovate, 65–75x20μ, and ascospores 25x5μ.

MICOSPHÆRELLA FENDLERI n. sp. (*Sphærella*). Perithecia minute, scattered, solitary, at first covered by the cuticle becoming slightly erumpent; asci oblong, short-stipitate, 40–45x10–12μ; paraphyses none; ascospores fusiform, obtuse, uniseptate, hyaline, slightly constricted, 15–17x3.5–4μ.

On dead stems of *Thalictrum Fendleri*, Bob Creek, 10,500 feet, June 28, n. 1091.

MYCOSPHÆRELLA GLYCOSOMÆ n. sp. (*Sphærella*). Spots none; perithecia thickly scattered over large areas, black, spherical, firm not collapsing, about 100μ; asci sessile, broadly obovate, obtuse, aparaphysate, 8 spored, about 50x 10μ; ascospores inordinate, narrowly ovate, larger end obtuse, smaller end subacute, about equally uniseptate hyaline, guttulate, about 16x5μ.

Dead weather-worn stems of *Glycosoma occidentalis*. Same station and date with the last, n. 1047.

Mycosphærella Iridis (Aud.) Schrœt. (*Sphærella*) in Engl. & Prantl. i. 425. On dead leaves and stems of *Iris Missouriensis*, Chicken Creek, 9,000 feet. July 7, n. 1096.

Mycosphærella Tassiana (DeNot.). Johans. in Engl. & Prantl. Slide Rock Cañon, 11,000 feet, July 2, on *Festuca*, n. 1098.

Pleosporaceæ.

Ophiobolus Castilleiæ n. sp. Spots none; perithecia scattered, finally erumpent, black, 200–250μ; asci clavate, short-stipitate, 90–120x12μ; paraphyses flexuous, thread-like; ascospores yellowish brown, guttulate, 50–55x5μ, nearly straight in the ascus.

On dead stems of *Castilleia confusa*, Greene, Mt. Hesperus, 10,000 feet. June 30. Also common on Bob Creek, n. 1095.

Ophiobolus Festucæ n. sp. Spots black, 1mm long, mostly on the upper half of the leaf; perithecia immersed, finally rupturing the epidermis, 200–250μ; asci broadly clavate, short-stipitate, 110–130x20–25μ; paraphyses numerous, coiled at the apex; ascospores very slender fusiform, guttulate, 40–50x3–4μ.

No. 361, on dead leaves of *Festuca*, Chicken Creek, 9,500 feet, July 6.

Pleospora Balsamorrhizæ n. sp. Perithecia scattered, at length partially erumpent, somewhat fibrillose below, glabrous and depressed above, 300–400μ, ostiolum short, conical; asci 4–8, broadly clavate or obovate, 200–250x 70–80μ; ascospores 8, inordinate, each surrounded by a yellow gelatinous coat, 7-septate, constricted at each septum, but more deeply at the center, each cell 2–4 times vertically divided, quite variable in size, in the same perithecium from 60x28μ to 38x16μ, averaging 45x22μ.

No. 1097, on dead stems of *Balsamorrhiza deltoidea*, Mancos, June 24.

Pleospora herbarum (Pers.) Rabh. Herb. Myc., 547. On dead stems of a *Vicia*, n. 1092. La Plata River, 9,500 feet, July 11.

Pleospora megalotheca n. sp. Perithecia scattered, erumpent, glabrous, depressed-globose, ostiolum short, conical; asci 15–20, oblong, rather long-stipitate, very thick walled, 8-spored, 200–250x40–45μ; ascospores obliquely monostichous or distichous, ovate, yellowish-brown, becoming opaque, 11–13 septate, the cells with 2–3 longitudinal septa, 40–45x16–20μ.

No. 172. On dead stems of *Achillea millefolium*, Bob Creek, 10,500 feet, June 27, n. 172.

Valsaceæ.

Valsa boreella Karst. Myc. Fenn., ii. 141. On dead branches of *Salix*, upper La Plata River, 10,000 feet, July 13, n. 1117.

Mucedinaceæ.

Monilia Cerasi n. sp. Covering the entire fruit with a white coating, which becomes ash-colored with age; fertile hyphae very short, ascending, hyaline, widely branching; conidia often as many as 10 or 12-catenulate, hyaline, lemon-shaped, 10–12 x 8–10μ.

On immature fruit of *Cerasus* (wild cherry), Parrott City, July 11, n. 1083.

Ovularia compacta Ell. & Ev. Journ. Myc., v. 68. On living leaves of *Agoseris*, Chicken Creek, 9,000 feet, July 6, n. 353.

Ovularia sphæroidea Sacc. Mich. i. 130. On living

leaves of *Lupinus*, Chicken Creek, 9,000 feet, July 6, n. 368.

Ramularia Crepidis, Ell. & Ev. Jour. Myc. iv:46. On living leaves of *Agoseris*, Mt. Hesperus, 10,000 feet, June 30, n. 1088.

Tuberculariacæ.

Exosporium Sambuci, n. sp. Sporodochia scattered, finally rupturing the epidermis longitudinally, sometimes confluent in lines 1cm long, usually convex and irregularly tuberculate; sporophores 5–6μ in diameter, septate, yellowish, often deciduous remaining attached to the conidium; conidia oval or obovate, brownish yellow, 3-septate, not constricted, 40–44x17–20μ.

On dead twigs of *Sambucus melanocarpa*, upper La Plata River, 10,000 feet, July 13, n. 1104.

Sphæroidaceæ.

Diplodina Fraseræ (Ell. & Ev.), Tracy & Earle, Bull. Torr. Club, xxiv. 289. (*Ascochyta Fraseræ*, Ell. & Ev). No. 171, on dead stems of *Frasera*, Bob Creek, 10,500 feet, June 27. Common. Our specimens agree with the amended description given by Ellis & Everhart, Bull. Torr. Club, xxiv. 464. The habitat on dead stems, and the spherical black carbonaceous perithecia determine it to be a *Diplodina* rather than an *Ascochyta*.

Phoma delphiniicola n. sp. Perithecia scattered, or sometimes two or three together under the whitened epidermis, black, large, $\frac{1}{3}$ to $\frac{1}{2}$mm, partially collapsing, at length somewhat erumpent, often bordered by a narrow brown stain; sporules cylindrical, minutely guttulate, 8–10x2μ.

Dead stems of *Delphinium*. Bob Creek, 10,500 feet, June

28, n. 1094, and on dead stems of *Aconitum Columbianum*, Bear Creek Divide, 11,000 feet, June 29, n. 231.

PHOMA INULINA Sacc. Mich. ii. 91. On dead stems of *Pyrrocoma crocea*, Bob Creek, 10,500 feet, June 28, n. 204.

PHOMA SCEPTRI Karst. Hedw. xxiii. 159. Dead stems of *Pedicularis*, Bob Creek, June 27, n. 1106.

SEPTORIA OSMORRHIZÆ Peck, Rep. N. Y. Mus. XXXIX. 46. Leaves of *Glycosoma occidentalis*, Bob Creek, 10,500 feet, July 3, n. 1038. Abundant, mostly infesting the lower leaves; agreeing well with eastern specimens, see Ellis n. 3137.

CHARACEÆ.

CHARA CONTRARIA, A. Br. In Hamor's Lake, near Durango, n. 1115.

LICHENES.

Determined by Prof. BRUCE FINK.

BIATORA DECIPIENS, Fr. On dry open ground, Bear Creek Divide, at 11,000 feet, n. 232.

BIATORA SANGUINEVATRA, Tuckerm. Moist ground in spruce woods, Slide Rock Cañon, 11,000 feet, n. 286.

BUELLIA PARASEMA, Th. Fr. Near Mancos, on dead branches of *Juniperus monosperma*, n. 785.

CLADONIA FIMBRIATA, Fr. On a decaying log, Bob Creek, 10,000 feet, n. 779.

CLADONIA PYXIDATA, Fr. Moist ground on Bob Creek, 10,000 feet, n. 201.

CLADONIA SYMPHYCARPA, Fr. Terrestrial in spruce woods, Bear Creek Divide, 11,000 feet, n. 337.

LECANORA PACIFICA, Tuckerm. Mancos; n. 789 on dead

branches of juniper; n. 790 on bark of *Populus angustifolia.* Prof. Fink remarks, concerning the specimens that "They are more pruinose than other herbarium specimens, and the locality is new."

PANNARIA LEPIDOTA, Fr. On dry ground, Mt. Hesperus, 11,000 feet, n. 1114.

PARMELIA CONSPERSA, Ach. Rocks on Bob Creek, 10,500 feet, n. 1113.

PELTIGERA CANINA, Hoffm. Moist ground in Slide Rock Cañon, n. 242.

PERTUSARIA COMMUNIS, DC. At Mancos, on dead branches of juniper, n. 784.

PHYSCIA STELLARIS, Tuckerm. Habitat, etc., same as the last, n. 788.

PLACODIUM AURANTIACUM, Næg. & Hepp. On juniper; n. 793 on the bark; n. 783 on dead wood of same, all in the vicinity of Mancos.

PLACODIUM CERINUM, Næg. & Hepp. At Mancos, on bark of *Populus angustifolia*; n. 792.

RHINODINA SOPHODES, Nyl. At Mancos on juniper, n. 786.

THELOCHISTES POLYCARPUS (Ehrh.) At Mancos, on living bark of *Populus angustifolia*, n. 791, on *Atriplex*? n. 781. At Bob Creek on dead twigs of *Picea Engelmannii*, n. 203.

USNEA CAVERNOSA, Tuckerm. At 10,000 feet on the upper La Plata, n. 778.

FILICES.[1]

CRYPTOGRAMMA ACROSTICHIOIDES, R. Br. App. Frank.

[1] The reports on mosses and hepatics of this collection will appear elsewhere later. E. L. G.

Journ. 767. In clefts of dry rocks on Mt. Hesperus, at 11,000 feet, also in like situations on the upper La Plata, but nowhere common, n. 245.

CYSTOPTERIS FRAGILIS, Bernh. Schrad. Journ. Bot. i, part 2, 27. Rather common on moist cliffs of the upper La Plata and elsewhere, at about 10,000 feet, n. 988.

EQUISETACEÆ.

EQUISETUM ARVENSE, Linn. Sp. 1061. On Bob Creek at 10,000 feet and frequent along alpine or subalpine cold streamlets, n. 989.

EQUISETUM PYEMALE, Linn. l. c. Common in wet meadows at Mancos; also seen at Trimble Springs, n. 103.

EQUISETUM ————, No. 1129, a few plants only, in a wet meadow at Mancos, not well in fruit.

CONIFERÆ.

PINUS EDULIS, Engelm. Wislizenu's Rep. 88. Mancos, at about 7,200 feet, constituting along with *Juniperus monosperma*, the low sparse woodland growth of the first foothills, n. 93.

PINUS PONDEROSA SCOPULORUM, Engelm. in Bot. Calif. ii. 126. This common pine of the Rocky Mountains is said by the collectors to begin on the hills north of Mancos, at an elevation of about 8,000 feet, and to mark its own distinct floral belt or zone lying between that of the piñon and cedar belt below, and of the aspen-spruce zone above, the former beginning at about 7,500 feet, the latter at approximately 9,000 feet. The species is the only timber pine of the region, n. 376.

Picea Engelmannii (Parry) Engelm. Trans. St. L. Acad. ii. 212. This is the common spruce of the country, constituting the principal timber growth at from 10,000 to 11,500 feet, this last elevation marking almost the limit of trees. The specimens are from Bob Creek, at 10,500 feet, n. 320.

Pseudotsuga taxifolia, Britton, in Trans. N. Y. Acad. viii. 74. Tree chiefly confined to the precipitous sides of deep cañons within the pine belt. The specimens are from 8,000 feet, in the West Mancos Cañon, n. 387.

Abies concolor, Parry in Am. Nat. ix. 204. A large but rather scarce tree, with light-gray trunk; specimens from Bob Creek, La Plata Mts., at 10,500 feet, n. 22.

Juniperus nana, Willd. Sp. iv. 854. A dwarf, sometimes almost trailing shrub of the higher mountains; the specimens from some 10,500 feet along Bob Creek, n. 335.

Juniperus monosperma, Sargent. The red cedar of the foothills, ranging between 6,500 and 7,500 feet, associated with *Pinus edulis*. The specimens are from Mancos, and were distributed as *J. occidentalis*, Hook., n. 77.

Juniperus scopulorum, Sargent, Gard. & Forest, x. 420. In the vicinity of Durango, but rather rare; only a few small trees seen, and these associated with *J. monosperma*, for which it was mistaken in making the distribution, n. 484.

Gnetaceæ.

Ephedra ————. Sterile branches only, the species hardly determinable. Mancos, said to be frequent in low foothills, n. 397.

Typhaceæ.

Typha latifolia, Linn. Sp. 971. A few plants in a small pond at Bob Creek, the altitude about 10,000 feet.

NAIADACEÆ.

POTAMOGETON PECTINATUS, Linn. Sp. 127. Hamors' Lake, north of Durango, 24 July, n. 499.

TRIGLOCHIN PALUSTRE, Linn. Sp. 338. Hamors' Lake, 24 July, n. 501.

TRIGLOCHIN MARITIMUM, Linn. Sp.339. Trimble Springs, near Durango, 26 July, n. 476.

ALISMACEÆ.

ALISMA PLANTAGO AQUATICA, Linn. Sp. 342. Lower La Plata Cañon, 11 July. Specimens poor, just beginning to flower, n. 1127.

GRAMINEÆ.

By S. M. Tracy.[1]

PANICUM VIRGATUM, Linn. Sp. 59. Occasional on railway embankment near Trimble Springs, Colo., n. 962. The only *Panicum* seen on the expedition.

PHALARIS ARUNDINACEA, Linn. l. c. 55. Abundant along Hamors' Lake, and occasional in wet places near Trimble Springs, n. 918.

ARISTIDA PURPUREA, Nutt. Trans. Am. Phil. Soc. v. 145. On dry hills about Durango, n. 974.

A. PURPUREA HOOKERI. With the type, but also at lower altitudes, n. 973.

STIPA COMATA, Tr. & Rupr. Mem. Acad. Petr. Ser. 6, vol. v. 75. Rocky slopes in West Mancos Cañon, 7,000 to 9,000 feet, n. 358.

STIPA NELSONII, Scrib. Bull. Dep. Agr. xi. West Mancos Cañon, and also at Poncho Pass, n. 954.

[1] Done by Dr. Tracy in 1899; amended and brought to date by E. L. Greene, January, 1901.

Oryzopsis micrantha, Thurb. in Porter Fl. Colo. 145. On dry hills about Durango and on Chicken Creek, n. 961.

Orizopsis cuspidata, Vasey, Gram. U. S. 23. Common on sage plains, and on dry hills below 8,000 feet, n. 436.

Phleum pratense, Linn. l. c. 59. Commonly naturalized in fields and by waysides, n. 430.

Phleum alpinum, Linn. l. c. Common inhabitant of mountain meadows at 9,000 to 10,500 feet, n. 972.

Alopecurus aristulatus, Michx. Fl. i. 43. By streams, up to 10,500 feet, n. 972.

Sporobolus brevifolius (Nutt.), Scribn. Occasional in dry fields at Mancos and Durango, ascending to 9,000 feet in the mountains, nn. 325, 425.

Sporobolus airoides, Torr. Marcy's Rep. 300. Common in adobe soils about Mancos, Parrott City and Durango, and also at higher elevations, below 9,000 feet, n. 398.

Sporobolus asperifolius, Nees & Meyen, in Nov. Act. Nat. Cur. xix. Suppl. I, 141. Occasional along the Las Animas near Durango, n. 964.

Agrostis exarata, Trin. Gram. Unifl. 205. With the last, but not common, n. 950.

Agrostis hyemalis, BSP. Catal. 68. Common along streams and ditches below 10,000 feet, n. 951.

Calamagrostis hyperborea, Lange in Fl. Dan: t. 2942. Muddy banks about Hamor's Lake, n. 951.

Calamagrostis hyperborea Americana, Kearney, Bull. Agrost. xi. 41. On Panther Creek, near Durango, n. 967; rare.

Deschampsia cæspitosa, Beauv. Agrost. 91, t. 18, f. 3.

Common along the La Plata; very luxuriant in wet meadows near Hamor's Lake, n. 982; a peculiar dwarf from (n. 983) near Little Kate Mine, 11,500 feet.

TRISETUM SUBSPICATUM, Beauv. l. c. 88. Abundant in the cañon of the upper La Plata, and on hills about Hamor's Lake up to 12,000 feet, nn. 955, 957. The variety MOLLE, much dwarfed, only 5–7 inches high at 12,000 feet and upwards, n. 956.

AVENA STRIATA, Michx. Fl. i. 72. Little Kate Mine, at 10,000–11,000 feet; not common, n. 976.

DANTHONIA PARRYI, Scribn. Abundant in the pine belt along Chicken Creek, 8,500–8,900 feet, but not seen elsewhere, n. 349.

BOUTELOUA OLIGOSTACHYA, Torr. in Gray Man., 2 ed., 553. Occasional near Durango, and on the plains west of Mancos, n. 971.

BOUTELOUA CURTIPENDULA, Torr., Emory's Rep. 153. Dry gravelly soil along the La Plata and Las Animas Rivers, n. 970.

BECKMANNIA ERUCÆFORMIS, Host. Gram. Austr. iii. 5. Rather common in wet places at Durango and Trimble Springs, n. 959.

KŒLERIA CRISTATA, Pers. Syn. i. 97. One of the commonest grasses up to about 9,000 feet; rare above that; extremely variable as to length of leaf, nn. 99, 114, 324.

MELICA PARVIFLORA, Scribn. Mem. Torr. Club, v. 50. On shaded rocks, in the cañon of the La Plata, at 9,500 feet, rare, n. 969.

DACTYLIS GLOMERATA, Linn. Sp. 71. Along roadsides here and there; barely naturalized, n. 960.

Poa annua, Linn. Sp. 68. Observed only in a field near Hamor's Lake, n. 940.

Poa laxa, Hænke in Jirasek, Beob. 118. Summit of Mt. Hayden, 13,000 feet, n. 938.

Poa alpina, Linn. Sp. 67. Rare below 9,000 feet, common at higher elevations, very strong and luxuriant near Little Kate Mine, 11,000 feet, but becoming much dwarfed above 12,000 feet, nn. 925, 928, 929.

Poa cenisia, All. Auct. 40. Only at summit of the divide above Cumberland Mine, 12,000 feet, n. 933.

Poa pratensis, Linn. Sp. 67. Abundant below 9,000 feet, and variable. A form from the La Plata Cañon, near the upper limit of the species, has a very close panicle, with glaucous glumes; while another, from dry gravelly soil about Parrott City, has the panicle short and still more slender, and the glumes dark-purple, nn, 930, 932.

Poa nemoralis, Linn. Sp. 69. Occasional on dry banks, 9,000–11,000 feet, n. 935.

Poa arida, Vasey, U. S. Herb. i. 270. Occasional at Mancos, 7,000 feet, and in La Plata Cañon, 9,500 feet, n. 327.

Poa Buckleyana, Nash, Bull. Torr. Club, xxii. 465. On dry hills, 7,000–9,500 feet; rather rare, n. 110.

Poa longipedunculata, Scribn. Bull. Agrost. xi. 54. A characteristic species of the region of the West Mancos and its tributaries at from 9,000 to 10,000 feet altitude; not seen above 11,000 feet, or on the easterly slope of the mountains, nn. 138, 160, 194, 326.

Poa lucida, Vasey, U. S. Herb. 274. Common about Mancos in dry soil; also a peculiar form, with very hairy

glumes, in the La Plata Cañon, this at about 9,000 feet, nn. 434, 937.

Poa occidentalis, Vasey, l. c. Occasional along Bob Creek, 10,000–11,000 feet, n. 317.

Poa Grayana, Vasey, l. c. 272. In meadows near the limit of trees on Mt. Hesperus, n. 266.74.

Poa Fendleriana, Vasey, Bull. Dept. Agric, xiii. Occasional at 10,000–11,000 feet on the western slope of Mt. Hesperus, n. 262.

Poa epilis, Scribn. Circ. ix. 5. Abundant about Little Kate Mine, 11,500 feet, n. 934.

Poa rupestris, Vasey. On both eastern and western slopes of Mt. Hesperus, at about the limit of trees, n. 932.

Poa leptocoma, Scribn. Common along the upper La Plata at 9,000 to 11,500 feet. A very slender form with widely divergent-branched panicles occurs at about 11,000 feet near the Little Kate Mine, nn. 347, 926, 927.

Panicularia nervata, Kuntze, Rev. Gen. 783. Along streams and irrigating ditches in abundance, n. 953.

Panicularia pauciflora, Kuntze, l. c. In a bog near Bob Creek, 10,000 feet, n. 279.

Panicularia ———. No. 281; in bog with the last.

Puccinellia distans, Parl. Fl. Ital. i. 367. Along the Las Animas near Durango; rare, n. 963.

Festuca rubra, Linn. Sp. 74. Rather common along the sides of the La Plata Cañyon, 9,000–12,000 feet, nn. 920, 921.

Festuca ovina, Linn. l. c. 73. Very common in mountain meadows, n. 334. The Alpine variety brevifolia

abundant in large tufts above Cumberland Mine at 12,300 feet, n. 965.

Festuca scrabella, Torr. in Hook, Fl. ii. 252. The most common species of the genus; found everywhere between 7,500 and 10,500 feet, n. 443.

Festuca elatior, Linn. l. c. 75. In a field near Trimble Springs; doubtless introduced, n. 919.

Festuca Vaseyana, Hack. In open woods along the West Mancos River, 9,000–10,000 feet, n. 328.

Festuca Thurberi, Vasey in Wheeler's Rep. 292. Very plentiful on the hills upon Chicken Creek and the La Plata, 9,000–10,000 feet, nn. 344, 356.

Bromus ciliatus, Linn. Sp. 76. The common species at 7,000–10,000 feet, along watercourses; very rank forms occurring in higher altitudes, nn. 332, 987. The var. montanus, Vasey, at from 7,000 to 9,000 feet, and mostly near the summits of the ridges rather than by streams, n. 382. Also var. minor, Munro, on dry hills near Durango, not common, n. 986.

Bromus breviaristatus, Buckl. Proc. Philad. Acad. for 1862, 98. Characteristic species of the pine belt and variable. A smooth form with strict panicle occurs near Dix, while an opposite extreme, with widely open panicle and weak drooping pedicels was obtained at Trimble Springs, nn. 333, 984, 985.

Bromus Porteri, Nash, Bull. Torr. Club, xxii. 512. In the pine belt above Mancos, and at Parrott City, 8,000–9,000 feet, n. 432.

Agropyrum violaceum, Vasey, Gram. U. S. 45. Occasional along Chicken Creek at about 9,000 feet, but not elsewhere noticed; n. 949.

AGROPYRUM TENERUM, Vasey, Bot. Gaz. x. 258. Common in dry land below 9,000 feet; also a very slender and short-awned form at Trimble Springs and at Poncho Pass, nn. 111, 948.

AGROPYRUM CANINUM, Beauv. Agrost. 102. Common on the plains about Mancos and among the foothills; seldom occuring at elevation greater than 9,000 feet. Among the more notable deviations from the type is one with very pubescent sheaths, this from the Cañon of the La Plata; and there is one from Mancos with rigidly divergent leaves; nn. 431, 440, 977.

AGROPYRUM PSEUDO-REPENS, S. & S. On hills near Durango; not seen elsewhere, n. 946.

AGROPYRUM SCRIBNERI, Vasey, Bull. Torr. Club, x. 128. Abundant on the divide above Cumberland Mine, at 12,000–12,300 feet, n. 978.

HORDEUM PUSILLUM, Nutt. Gen. i. 87. Occasional in dry fields about Mancos and Durango.

HORDEUM ADSCENDENS, HBK. Nov. Gen. et. Sp. i. 180. Abundant on dry land above the river at Mancos; not before known as occurring within the United States except along irrigating ditches at Glendale, Arizona, n. 109.

ELYMUS CANADENSIS, Linn. Sp. 83. Occasional along the Las Animas, n. 980.

ELYMUS GLAUCUS, Buckl. Proc. Philad. Acad. (1862) 99. A state of this species showing compound spikes; found only at Hamor's Lake, n. 981.

ELYMUS MACOUNII, Vasey, Bull. Torr. Club, xiii. 119. Hills near Durango; seemingly rare, n. 979.

SITANION BREVIFOLIUM, J. G. Smith, Bull. Agrost. xviii.

17, t. 3. Abundant on dry sterile soil about Hamor's Lake, n. 4274; Mancos, n. 429; Durango, n. 4272.

HILARIA JAMESII, Benth. in Journ. Linn. Soc. xix. 62. Common in the plains about Mancos, and on dry hills near Durango, n. 427.

CYPERACEÆ.

CAREX ALPINA, Swartz. Upper La Plata River, 10,000 feet, July 13, n. 726.

CAREX ATRATA, Linn. Mt. Hesperus, 11,500 feet, June 30; n. 261; Little Kate Mine, La Plata Mts., 11,000 feet, July 13, a large form; n. 709; Mt. Hesperus, 11,500 feet, July 2, a small form; n. 736; Mt. Hesperus, 10,000 feet, June 30, an unusual form approaching the var. DISCOLOR, n. 244.

CAREX ATRATA DISCOLOR BAILEY? Upper La Plata, 10,000 feet, July 13, n. 725; also observed near Bob Creek.

CAREX AUREA, Nutt. Mancos, 7,000 feet, July 8. A small form common in swampy river bottoms, n. 721; also in West Mancos Cañon, 9,000 feet, a much larger plant, n. 330.

CAREX CANESCENS, Linn. Bob Creek, La Plata Mts., 10,500 feet, July 3, common in bogs, n. 693.

CAREX CAPILLARIS, Linn. West Mancos Cañon, July 4, n. 329.

CAREX DEFLEXA FARWELLII, Britton. Little Kate Mine, 11,500 feet, July 14, n. 685.

CAREX DOUGLASII, Boott. La Plata River, 9,000 feet. July 11, n. 697.

CAREX FESTIVA, Dewey. With the last. n. 699.

CAREX FESTIVA PACHYSTACHYA, Bailey. Bob Creek, 10,500 feet, June 28, n. 731.

CAREX FŒTIDA, All? Little Kate Mine, 11,500 feet. July 14, n. 708.

CAREX GEYERI, Boott. Bob Creek, 10,500 feet, July 1, n. 700. A common and characteristic plant of the dryer ridges and meadows.

CAREX HOOKERIANA, Dewey. Dry meadows at Dix, 10 July, n. 701.

CAREX KELLOGGII, W. Boott. Bob Creek, 10,500 feet, June 28, n. 191.

CAREX LANUGINOSA, Michx. Durango, 6,500 feet, July 26, n. 707.

CAREX LUPULINA, Muhl. With the last, n. 706.

CAREX MARCIDA, Boott. Same place and date, n. 712.

CAREX MONILE, Tuckerm. Hamor's Lake, 9,000 feet, July 24, n. 719.

CAREX NOVA, Bailey. Upper La Plata, 10,000 feet, July 13, n. 702.

CAREX OBTUSATA, Lilje. Chicken Creek, 9,500 feet, July 6, n. 352.

CAREX OCCIDENTALIS, Bailey. La Plata River, 9,000 feet, July 12, n. 722. Mt. Hesperus, 10,000 feet, June 30, n. 264.

CAREX PRESLII, Steud. La Plata River, 10,000 feet, July 13, n. 724.

CAREX ROSTRATA, Stokes. Hamor's Lake, July 24, n. 705.

CAREX RUPESTRIS, All. Cumberland Mine, 12,300 feet, July 15, n. 739.

CAREX SICCATA, Dewey. La Plata River, 10,000 feet, July 12, n. 730.

Carex straminiformis, Bailey. West Mancos Cañon, 9,500 feet, July 4, n. 322.

Carex tenella, Schk. Bob Creek, 10,500 feet, June 28, n. 193.

Carex teretiuscula, Gooden. Hamor's Lake, July 24, n. 717.

Carex utriculata, Boott. Bob Creek, 10,000 feet, July 1, in a bog, n. 280.

Carex viridula, Michx. Hamor's Lake, July 24, n. 713.

Eriophorum polystachyum, Linn. With the last, n. 483.

Juncaceæ.

Juncus Balticus, Willd. Berl. Mag. iii. 298. About Mancos, 7,000 feet, 8 July, n. 438.

Juncus longistylis, Torr. Bot. Mex. Bound. 223. At Trimble Springs north of Durango, 26 July, n. 599.

Juncus nodosus, Linn. Sp. 2 ed. 466. Same station and date, n. 704.

Juncus Mertensianus, Bong. Veg. Sitch. 167. On the upper La Plata, at 10,000 feet, 13 July, n. 661.

Juncus tenuis, Willd. Sp. ii. 214. Common on the lower sage plains about Mancos, 8 July, n. 424. The variety congestus on Chicken Creek at 9,000 feet, 7 July, n. 742.

Juncus xiphioides, E. Mey. Syn. Junc. On the upper La Plata at 9,000 feet, 11 July, n. 741.

Luzula parviflora, Desv. Journ. Bot. i. 144. At Little Kate Mine, La Plata Mts.; very common along streamlets at 11,000 feet; 14 July, n. 740.

LUZULA SPICATA, DC. Fl. Fr. iii. 161. Cumberland Mine, La Plata Mts., at 12,300 feet, 15 July, n. 738.

MELANTHACEÆ.

ZYGADENUS DILATATUS. Two feet high or more, the rather copious foliage mostly a foot long, oblanceolate, tapering to an elongated petiolar basal portion, the dilated upper parts nearly acutish, the leaf as a whole but indistinctly and finely nervose; bracts of the raceme scarious, lanceolate, about equalling the pedicels or shorter; segments of the perianth oval, obtuse, scarcely unguiculate, faintly striate, mainly white; the green nectariferous spot at base broad and retuse, scarcely obcordate.

Little Kate Mine, La Plata Mountains, 13 July, 1898. Plant pale and glaucescent, this and its loose rather few-flowered raceme indicating its near relation to *Z. elegans*, from which its dilated and oblanceolate foliage, broad sessile perianth-segments and merely retuse nectary require that it should be separated, n. 522.

VERATRUM CALIFORNICUM, Durand, Journ. Philad. Acad. 2 ser. iii. 103. Hesperus City, 16 July. Not numbered; therefore probably not in the sets.

LILIACEÆ.

LILIUM MONTANUM, A. Nelson, Bull. Torr. Club, xxvi. 6. In moist thickets of the La Plata Cañon, 12 July. Said to be rare; n. 1124, distr. as *L. Philadelphicum*, and none too distinct from that.

ERYTHRONIUM GRANDIFLORUM, Pursh, Fl. i. 231. In the La Plata Mts., on the Bear Creek Divide at 11,000 feet, 29 June, n. 213. Also at 10,500 feet near the Cumberland Mine, 15 July; not numbered; probably not in the sets.

LLOYDIA SEROTINA, Sweet, Hort. Britt. 2 ed. 527. At

timber line on Mt. Hesperus, 2 July; the specimens large, 6 or 7 inches high, the perianth more than ½ inch; n. 256.

Calochortus Gunnisonii, Wats. Bot. King Exp. 348. Sage plains about Mancos, 8 July, n. 1125.

Allium acuminatum, Hook. Fl. ii. 184, t. 196. Plains near Mancos, 21 June, n. 89.

Allium dictyotum. Bulbs ovoid, not deep-seated, clothed with thinnish fibrous-papery dry outer coats, these strongly reticulate: scapes stoutish, commonly 1 to 2 feet high, sometimes only 8 or 80 inches: leaves of two-thirds the length of the scape, ligulate, striate, obtusish: umbel comparatively small and dense, the stout pedicels short and uncommonly fleshy; perianths flesh-color; segments oval, acutish or obtuse: stamens much shorter; filaments broadly subulate to above the middle.

Cumberland Mine, La Plata Mts., at 10,500 feet, n. 479. Also on Mt. Hesperus at like elevation, n. 253; this distributed for *A. mutabile*, but only a smaller *A. dictyotum* evidently. The species is subalpine, and a fine large one, related, of course, to *A. reticulatum* and *mutabile*.

Vagnera stellata, Morong, Mem. Torr. Club, v. 114. At 9,500 feet, on Chicken Creek, n. 147.

Vagnera amplexicaulis, Greene, Man. 316. On the La Plata, altitude not given, n. 547.

Iridaceæ.

Iris Missouriensis, Nutt. Journ. Philad. Acad. vii. 58. At 8,000–9,000 feet, on Chicken Creek, n. 140.

Sisyrinchium montanum, Greene, Pitt. iv. 33. Meadows along the Mancos River, 25 June, n. 113; also at 9,000 feet, in Chicken Creek, 7 July, n. 377.